METHOD OF PREPARING BRAINS AND OTHER ORGANS FOR ANATOMICAL AND PATHOLOGICAL DEMONSTRATION.

By I. W. BLACKBURN, M.D.,

SPECIAL PATHOLOGIST TO GOVT. HOSPITAL FOR THE INSANE, WASHINGTON, D. C.

THE material used for the purpose is the so-called "Japan wax," which is really a concrete oil, the product of rhus succedanea, Ln., a tree of Japan. It comes in large rectangular blocks about one and a half inches thick; has a yellowish white color, and a somewhat rancid smell and taste. Its melting point varies from 107° F. to 131° F., and at ordinary temperature it is firm and solid. It is insoluble in water, scarcely soluble in cold alcohol, slightly so in boiling absolute alcohol, ether, and in turpentine. It is very soluble in *chloroform*, *benzole*, and *xylol*.

The specimen or organ, in this case the brain, is carefully hardened in some reagent which will preserve its size and shape as perfectly as possible, and the best for this purpose are Müller's fluid and Erlicki's solution.

Other hardening agents, such as alcohol, chloride of zinc and nitric acid, shrink the tissue too much, though the color is, perhaps, more pleasing. Hardening may be hastened by injecting the fluid into the vessels before removing the membranes, and these may be removed just as well after three or four days' immersion in the fluid.

After hardening for about five weeks in Müller's or a shorter time in Erlicki's fluid, the specimen is removed, washed, placed in dilute alcohol, and gradually advanced through alcohols increasing in strength until absolute alcohol is used. When thoroughly dehydrated by the use of absolute alcohol it is placed in a saturated solution of Japan wax in *chloroform*, and allowed to remain until the alcohol

is displaced by the chloroformic solution.[1] The organ is then transferred to a bath of melted wax and kept therein at the melting point until thoroughly infiltrated. After infiltration is complete, the specimen is removed from the bath, the wax drains from the surface leaving it smooth, and when cool it may be varnished if desired, and upon the varnish, painted or lettered to suit the purpose of the operator.

If the wax cannot be kept melted continuously during the process of infiltration it is better to lift out the specimen and replace it in the chloroformic bath, as when cooled in large masses the wax has a tendency to crack, and by this the preparation might be injured. A small proportion of paraffine, with which the wax is perfectly miscible, will prevent cracking and in no way interfere with the process.

Specimens hardened in the chromic acid salts and prepared by this method have a dark olive or bronze color; those hardened in alcohol or chloride of zinc become slightly darkened by the process. There is no odor to the specimens except that of the wax, which is not disagreeable.

The preparations are permanent in the air, are more durable than wax models, and the shape and size are perfectly preserved. Specimens prepared two years ago show no appreciable change.

The time required for the various steps of the process cannot be definitely given, as it will depend upon the size and character of the specimen; but after thorough dehydration, which is the most tedious part of the process, a hemisphere should be allowed to remain at least three days in each bath.[2]

---

[1] Chloroform is preferred to the other solvents on account of its safety; the others are highly inflammable.

[2] For the use of the "Japan wax" in microscopy, see article in the Transactions of Ninth International Medical Congress, vol. iii., page 407.